

Using altimeter and ocean color data for studies
of wave-induced transport and variations of ocean tracers

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The key role of ocean currents and eddy turbulence in the horizontal transport, diffusion and spatio-temporal variations of ocean tracers is well recognized and properly reflected in ocean numerical models. However, very little has been known about the role of oceanic wave motions in these processes. According to some theoretical studies, waves of any nature - from capillary to planetary - may induce mean transport, diffusion and fluctuations of tracers. Of practical importance to global ocean dynamics are baroclinic inertia-gravity (BIG) waves, including but not limited to purely inertial and tidal motions. A review of main theoretical and observational results on the effects of BIG wave motions is presented in this poster. Experimental results are based on the joint analysis of Topex altimeter and SeaWiFS data. These results show that, in the ocean regions where BIG wave motions attain a relatively large amplitude, they represent the dominant cause of the observed variability (e.g., of Chl-a concentration). In general, we find that the BIG wave induced transport is an important factor of horizontal exchange and, therefore, must be accounted for in ocean numerical models. Special techniques of altimeter data analysis, reviewed in this talk, may greatly facilitate this task.